with the description of a pretty fishing-village, low cliffs, and a coastguard station!

Chapter v., "Across the Plains," is probably the most successful in the book. Written in the same style as those just described, it is distinctly more realistic and dignified in its tone. The subject-matter is also more coherent, and its treatment—for the scope of the book—exhaustive. Were all ten chapters equal to this one, we would say Prof. Cole had been most successful in carrying out a set purpose pleasantly and beneficially for cultured readers who travel at home and abroad. But unfortunately the high-water level is seldom reached in the book.

Chap. vi. dips into the lore of "Dead Volcanoes," starting with the highland of Auvergne, and returning to our own islands. Chap. vii. is a careful study of "A Granite Highland," and generally of igneous rocks. "The Annals of the Earth" (chap. viii.) gives a general account of the stratigraphical succession. Chap. ix., "The Surrey Hills," is a very happy combination of the art of seeing and describing beauty of landscape, along with the practical demonstration of the principles of stratigraphy. It resounds with the stroke of the geologist's hammer, and the enthusiasm of a true guide and teacher. Chap. x., "The Folds of the Mountains," will be to most readers difficult, as it deals with the hard subject of the making of mountain-chains. The Alps are mainly considered, the writing is admirably clear, and the doctrines taught are in accord with all the newest researches.

It remains to add how often passages occur throughout the book which remind us of the artistic feeling for nature displayed by the author in a previous publication, "The Gypsy Road." Every small detail in a scene is touched with a sympathetic, kindly pen, that reminds one of the lingering brush of a Constable. Take his description of Fenland:

> "From Cambridge northward to the estuary of the Wash, there are forty-five miles of level ground. . . . Between the scattered villages lie areas of black peat, covered with coarse grass, and dug into here and there for fuel. The roads are carried along the crests of broad embankments, with dark, little drainage-cuts on either side of them, crossed by bridges to the fields. A few trees cluster round the old farm-houses, protecting them from the winds that sweep across the fenland steadily for weeks together. . . . The sky is usually full of great cumulus-clouds, dark grey below and silvery white above, where the sunlight strikes through them in long shafts across the grey-green plain. A church-tower or a windmill is visible ten miles away, when touched on by these sudden gleams; then it sinks back again into the great gloom of the horizon" (p. 121).

Taken as a whole, the book fails, in so far as it constantly mixes together two distinct styles of writing, the picturesque and the didactic. It is at the same time eminently readable, and will be warmly hailed by many lovers of geology out-of-doors. A solid groundwork is formed by the five chapters referred to above as partaking of the text-book method. The others are somewhat of a skim-swallow type, too rapid in their course, too overladen with detail and local colouring, to be adapted either to the serious wants of a student or to the slow apprehension of a complete novice in nature's fields. The book will appeal most to the dilettante student, or to the tourist who has already had abundant opportunity of observing, who delights in finding his own dim perceptions vividly mirrored by a trained scientific mind, and in seeing them marshalled towards the solution of "vexed problems of the globe."

MARIA M. OGILVIE.

PRIMITIVE PICTURE-WRITING.

The Beginnings of Writing. By Walter James Hoffman, M.D. With an Introduction by Prof. Frederick Starr. Pp. xiv + 209. (London: Macmillan and Co., 1895.)

THERE is no more fascinating subject for study than the development of the art of writing through its various stages, from the first rough pictures drawn by primitive man to the alphabets in use among the civilised nations of the present day. But the historic systems of writing go back to a remote antiquity, and although we can trace some of them back many hundreds of years, the question of their first origin is one that is beset with many difficulties. It is at this point, however, that the anthropologist comes to the antiquary's help, for he shows that the mind of savage man always works along the same general lines of development. All primitive races, whether in China, Central India, Western Asia, Europe, North Africa, or North America, have used the same rude means to record their thoughts and actions, scratching on their rocks or weapons rough pictures of their possessions and pursuits. The methods used by hunters of the Palæolithic age to record a successful hunting expedition resemble those which the North American Indian now employs. From these rude pictures the savage passes, by a natural law of development, to the representation of ideas, expressing motion or condition by means of gesture-signs. Then, after certain pictures have become associated with certain words, he begins to use them to express their sound but not their meaning; in fact, he begins to write phonetically. His pictures, as he writes more rapidly, change to signs, which become more and more simplified, and finally his system of syllabic writing he develops still further till he reaches the most perfect phonetic system of writing, the alphabet.

Such in brief are the main lines of development which all races follow who work out for themselves the art of writing, and it is this attractive subject that Mr. Hoffman has selected for his book. In the brief preface in which Prof. Starr introduces him and his book to the reader, we learn that he has for some years been engaged both in field-work and study among the Indian tribes of North America, and from his book itself we find that his studies have resulted in a most interesting collection of the various methods of writing employed by these primitive races. It is true that many of his examples are already well known from other publications, but the collection does not aim at being original, for the book belongs to an educational series, where original work would be out of place. What was wanted, and what in the main Mr. Hoffman has given us, was a representative collection of the various methods of writing employed by the North American Indians. These are here classified, described clearly and illustrated with numerous small cuts; and for this part of his work we have nothing but praise. But why did not Mr. Hoffman confine his book to the subject in which he is in a sense a specialist? Why did he seek

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to extend the aim of his volume so that it might apply to the beginnings of writing all the world over?

Yet such an extension Mr. Hoffman has attempted in the course of about 200 *octavo* pages printed in large type. The result was inevitable. The lion's share of the little space at his disposal falls naturally enough to the North American Indians with whose pictographs and writing he is most familiar; but, in consequence of this mistaken aim at universality, the book is peppered here and there with Egyptian hieroglyphs, once or twice a cuneiform character crops up, and we have even come across a Christian symbol. In many places, therefore, the work is patchy, and the reader is in some danger of bewilderment. Moreover, this is not the only danger to which Mr. Hoffman exposes his readers, by rashly leaving the ground he knows; for his studies have not been sufficiently extended to enable him to act as a trustworthy guide elsewhere. He is certainly wise in making considerable use of "The Alphabet," by Isaac Taylor, but some statements made twelve years ago naturally now-a-days need revision. For instance, the dates he quotes at the beginning of p. 184 must now be considerably altered in view of M. de Sarzec's recent discoveries at Telloh in Southern Babylonia. But perhaps the most misleading portions of the book are those passages in which he refers to the so-called "Hittite" inscriptions. Here Mr. Hoffman's authorities are not so trustworthy as Mr. Taylor, and the result is disastrous. From his description of these hieroglyphs, the reader would certainly infer that no doubt existed as to their interpretation, but no impression could be more erroneous. The four or five systems of interpretation that have been proposed, and the last of which appeared less than two years ago in the *Zeitschrift* of the German Oriental Society, differ totally from one another, and are mutually exclusive; that is to say, each interpreter has employed a different method and system of interpretation, and, although they all work on the same inscriptions, the translations they have produced do not agree at all. Of course Mr. Hoffman is at liberty to select one of these systems and to say it appears to him to be correct, but to take the results of one of them, and to describe them as though they were universally adopted without reference to the controversy which still rages, is surely misleading in the highest degree. Moreover, on p. 158 occurs this rather puzzling sentence: "In the Akkadian, *a* signifies 'water' . . . and is represented by the inverted triangle, the prototype in Hittite being the vase or *olla*." If we take this sentence literally, we can only infer that Mr. Hoffman considers the earliest cuneiform character to be the descendant of the Hittite hieroglyphs. We think, however, that he cannot seriously hold this view, and that the sentence referred to does not rightly express his meaning.

It is not necessary, however, to dwell at greater length on the blemishes which mar an otherwise excellent book. They might, indeed, have been avoided by the exercise of a little discretion, and the book would have been none the less interesting if its contents had been confined to the beginnings of writing among the tribes of North America. Even as it is, the greater part is both interesting and instructive, and the excellent print and numerous diagrams add considerably to its attractiveness.

OUR BOOK SHELF.

Elements of Geometry. By Prof. George C. Edwards. Pp. vii + 293. (London: Macmillan and Co., 1895.)

PROF. EDWARDS has forsaken the general sequence of parts in the study of the elements of geometry as propounded by Euclid, and has given us a book almost on a new plan. It must have been felt by most people, when in their early school-days they commenced to read Euclid's Elements, that much of the first few pages was almost unintelligible; and while no one would take exception to the rigidity of the methods there used, yet it would be exceedingly difficult for the average beginner to comprehend many of the definitions from the text alone without further *viva voce* explanation.

The substance of Euclid's Elements may be condensed into a very small fraction of its present dimensions for all practical purposes without losing any of the rigidity of argument or usefulness in application, and in this way a student may understand the proportionality of the sides of similar triangles without previously wading through four or five books. Prof. Edwards has arranged his book in this condensed form, and at the same time has presented his subject in a manner which attracts the attention of the reader by its simplicity and usefulness. One feature of this book is the great number of diagrams and figures which it contains; and where more than one figure is required with any one proposition, they are all carefully and separately given. The author does not overload the student with a mass of definitions at the commencement, but introduces them with explanations, when required, in the context. The usual mathematical conventions are introduced very early into the subject-matter, such as signs to denote directions; and the usual contractions are freely used, a table of them being given at the beginning for reference.

The first three chapters deal with propositions which relate to triangles and parallel lines; chapter iv. deals with the properties of circles; and chapter v. with areas, and the proportional relations of similar figures. This is one of the most important sections of the book, and includes some useful results which are generally obtained from books on trigonometry. Immediately following we find a chapter devoted to chords and tangents, and another to polygons and limits, including finding the value of π. Then follow over thirty pages of problem questions, with hints to some of their solutions, and innumerable figures to illustrate them where necessary. No pains appear to have been spared to make the whole as clear and intelligible as possible.

We then find a few chapters on solid geometry, which include matter dealing with surfaces, volumes, intersection of surfaces, and spherical triangles. The last chapter contains some useful propositions in conic sections.

Throughout the book there are a great number of examples, notes, suggestions and warnings to the reader, which should be of especial value to those who have not pursued the study of geometry to any extent previously. Altogether the book is a valuable one for any educational institution, and exceptionally so to technical students.

Elementary Mensuration. By F. H. Stevens, M.A. Pp. xii + 243. (London: Macmillan and Co., 1895.)

Mensuration. By the Rev. A. Dawson Clarke, M.A. Pp. vi + 88. (London: Rivington, Percival, and Co., 1895.)

MR. STEVENS' book is divided into two parts, the first only requiring a knowledge of Euclid's first book, and the use of algebraic symbols, in order to understand it; while the second part necessitates a much fuller acquaintance with geometry and algebra, and a slight knowledge of trigonometry. The book is not technical, but contains a thorough treatment of those principles upon which

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